

What is claimed is:

1. A device for determining at least one parameter of a medium flowing in a line, particularly the intake air of internal combustion engines, having a sensor carrier on which is arranged at least one sensor element introduced into the flowing medium and determining the parameter, wherein the sensor carrier (20) is a separate component which is secured in the device (1).

2. The device as recited in Claim 1, wherein the device has a measuring housing (6) and a support part (7); the measuring housing (6) is provided in the line (3) and is joined to the support part (7); the measuring housing (6) has a bypass channel (70); the sensor element (33) is arranged in the bypass channel (70); and the sensor carrier (20) is secured in the bypass channel (70).

3. The device as recited in Claim 1, wherein the device has a measuring housing (6) and a support part (7); the measuring housing (6) is provided in the line (3) and is joined to the support part (7); the measuring housing (6) has a bypass channel (70); the sensor element (33) is arranged in the bypass channel (70); and the sensor carrier (20) is secured in the support part (7).

4. The device as recited in Claim 1, wherein the device has a measuring housing (6) and a support part (7); the measuring housing (6) is provided in the line (3) and is joined to the support part (7); the measuring housing (6) has a bypass channel (70); the sensor element (33) is arranged in the bypass channel (70); a base support (26) is arranged in the support part (7); and the sensor carrier (20) is secured to the base support (26).

5. The device as recited in one of Claims 1 through 4, wherein the sensor carrier (20) has an aerodynamically formed oncoming-flow edge (47) directed contrary to the flowing medium.

6. The device as recited in one of Claims 1 through 4, wherein provided in the sensor carrier (20) is a sensor cavity (29) in which the sensor element (33) is disposed, the sensor cavity (29) forming a frame element and retaining element for the sensor element (33) and having a sensor cavity bottom (30).

7. The device as recited in one or more of Claims 1 through 4 or 6, wherein the medium flows in a main flow direction (16); and the sensor carrier (20) is formed in such a way or is aligned with respect to the main flow direction (16) of the flowing medium in such a way that a vector of the main flow direction (16) lies in the plane of a sensor region of the sensor element (33), or intersects the plane of the sensor region at a small positive or negative angle.

8. The device as recited in Claim 4, wherein the sensor carrier (20) has a surface (22) in which the sensor cavity (29) is located; and the surface (22) lies approximately at the same level as the bottom (24) of the base support (26).

9. The device as recited in Claim 6 or 8, wherein the sensor carrier (20) has a surface (22) in which the sensor cavity (29) is located; and the sensor cavity (29) corresponds in its dimensions at the level of the surface (22) of the sensor carrier (20) approximately to the dimensions of the sensor element (33), so that the sensor element (33) is able to be introduced flush into the sensor cavity (29), and the medium flows scarcely or not at all below the sensor element (33) into the sensor cavity (29).

10. The device as recited in one or more of Claims 6, 8 or 9, wherein the sensor cavity (29) has two opposite longitudinal edges (57, 57'), and a gap (44, 44') having an order of magnitude of a few micrometers is formed between the periphery of the sensor element (33) and the longitudinal edges (57, 57').

11. The device as recited in one or more of Claims 6 or 8 through 10, wherein the sensor carrier (20) has a surface (22) in which the sensor cavity (29) is located; and the sensor cavity (29) corresponds in its dimensions approximately to the dimensions of the sensor element (33), so that the sensor element (33) lies flush with respect to the surface (22) of the sensor carrier (20).

12. The device as recited in one or more of the preceding claims, wherein the device has a measuring housing (6) and a support part (7); the measuring housing (6) is provided in the line (3) and is joined to the support part (7), their common longitudinal axis (9) running perpendicular to a main flow direction (16); the device (1) has in the measuring housing (6) a bypass channel (70) which extends from an inlet port (97) and an inlet channel (74), to which a diverting channel (76) is adjoined into which the medium flows from the inlet channel (74), via an outlet channel (80) to an outlet port (107) discharging at an outer surface of the measuring housing (6) into the line (3).

13. The device as recited in Claim 6, wherein the sensor element (33) is glued to the sensor cavity bottom (30).

14. The device as recited in Claim 6 or 13, wherein configured in the sensor cavity bottom (30) is at least one adhesive displacement space (49) in the form of a

channel which runs in the direction from one longitudinal edge (57) of the sensor cavity bottom (30) - longitudinal edge (57) running parallel to the oncoming-flow edge (47) of the sensor carrier (20) - to an opposite longitudinal edge (57'), and into which adhesive, introduced into the sensor cavity (29), is able to spread upon insertion of the sensor element (33) into the sensor cavity (29) of the sensor carrier (20), and which divides the sensor cavity bottom (30) into a bearing surface (54) upon which the adhesive is applied, and into a sensor base area (52) which lies below a membrane (35) of the sensor element (33).

15. The device as recited in one or more of Claims 6 through 14,

wherein prepared in two opposite longitudinal edges (57, 57') of the sensor cavity (29), which run parallel or slightly inclined with respect to the oncoming-flow edge (47) of the sensor carrier (20), in the region of the bearing surface (54) is in each case a cut-out (63, 63') through which an adhesive bead (65), applied therein, is forced out upon insertion of the sensor element (33) into the sensor cavity (29), so that a gap (44) between the sensor element (33) and the sensor cavity (29) at the one longitudinal edge (57), a gap contiguous thereto between the sensor element (33) and the bearing surface (54), and a gap (44') contiguous thereto at the other longitudinal edge (57') are completely closed by the adhesive of the adhesive bead (65).

16. The device as recited in Claim 15, wherein the device (1) has a cover to which is connected a dividing wall that extends with a free end to the surface (22) of the sensor carrier (20); and the cut-outs (63, 63') in the longitudinal edges (57, 57') of the sensor cavity (29) run in the direction of the dividing wall (1) and are at least partially covered by it.

Table 1 The mean values of the variables measured during the three trials

wherein one or more spacers (60) in the form of elevations are provided in the sensor cavity bottom (30) of the sensor cavity (29).

18. The device as recited in one or more of the preceding claims,

wherein the sensor carrier (20) is made of plastic.

19. The device as recited in Claim 18,

wherein plastic from the plastics class of liquid crystal polymers, or partial crystalline, aromatic thermoplastic is used for the sensor carrier (20).

20. The device as recited in one or more of the preceding claims,

wherein the sensor carrier (20) is made of ceramic.

21. The device as recited in Claim 13,

wherein the adhesive for securing the sensor carrier (20)
seals the bypass channel (70) and the electronics space (19).

22. The device as recited in one or more of Claims 13 through
21,

wherein a channel end face (67) of the sensor carrier (20) adjoins the bypass channel (70) with form locking.

23. The device as recited in one or more of the preceding claims,

wherein a longitudinal axis (112) of the sensor carrier (20) is inclined by an angle (ϵ), and/or a longitudinal axis (110) of the sensor element (33) is inclined by an angle (Φ) with respect to the longitudinal axis (9) of the support part (7).

24. The device as recited in one or more of Claims 1 through 9, 11, 14, 15, 16, or 18 through 23, wherein the sensor carrier (20) is secured in the device (1) by adhesive.

25. The device as recited in one or more of Claims 1 through 9, 11, 14, 15, 16, or 18 through 23, wherein the sensor carrier (20) is secured in the device (1) by press-fit.